CLAIMS

What is claimed is:

1. A substantially pure population of human ovarian mesothelial cells wherein said ovarian mesothelial cells have a pluripotent capacity to differentiate into ovary surface epithelial cell or granulosa cells.

2. The ovarian mesothelial cells according to claim 1, wherein said ovarian mesothelial cells maintained in nutrient media retain the pluripotent capacity to differentiate into ovary surface epithelial cell or granulosa cells.

3. The ovarian mesothelial cells according to claim 1, wherein said ovarian mesothelial cells are identifiable by the expression of at least one cell surface marker.

4. The ovarian mesothelial cells according to claim 3, wherein said cell surface marker is a cytokeratin.

5. The ovarian mesothelial cells according to claim 4, wherein said cytokeratin is selected from the group consisting of cytokeratin 1, cytokeratin 5, cytokeratin 6, cytokeratin 7, cytokeratin 8, cytokeratin 10, cytokeratin 11, cytokeratin 13, cytokeratin 15, cytokeratin 16, cytokeratin 18, and cytokeratin 19.

6. The ovarian mesothelial cells according to claim 5, wherein said ovarian mesothelial cells further express vimentin as a cell surface marker.

7. The ovarian mesothelial cells according to claim 6, wherein said ovarian mesothelial cells have the morphology of cuboidal epithelial cells.

8. A method of isolating a substantially pure population of ovarian mesothelial cells, comprising:

(a) microdissecting a source of human fetal ovarian mesothelial cells;

(b) placing the source of ovarian mesothelial cells in nutrient media under culture conditions sufficient to sustain life of said ovarian mesothelial cells and wherein the nutrient media contains nutrients consisting of insulin, transferrin, epidermal growth factor, α-tocopherol, recombinant human heregulin β1, bovine serum albumin, and aprotinin;

(c) maintaining suitable culture conditions sufficient to allow the migration of ovarian mesothelial cells from the source of ovarian mesothelial cells into the nutrient media;

(d) maintaining suitable culture conditions sufficient to allow ovarian mesothelial cells to form aggregate or monolayer formations; and

(e) subculturing said aggregate or monolayer formations to obtain a substantially pure population of ovarian mesothelial cells.

9. A method of providing a source of an immunogen to a heterologous recipient, comprising administering a plurality of ovarian mesothelial cells as recited in claim 1 in an amount effective to induce an immune response in said recipient.

10. A method of generating human ovarian tissue models in non-human mammalian recipients, comprising administering a plurality of human ovarian mesothelial cells as recited in claim 1 into said recipients wherein said ovarian mesothelial cells are first maintained in basal nutrient and then administered at a location within said recipient, said location being able to support growth and differentiation of said ovarian mesothelial cells.

11. A method of providing cell therapy to a recipient, comprising administering human ovarian mesothelial cells as recited in claim 1 into said recipient wherein said ovarian mesothelial cells are first grown in nutrient media and then administered at a location within said recipient, said location being able to support growth and differentiation of said ovarian mesothelial cells.

12. A method of providing a source of ovarian mesothelial tissue-specific biological components for pharmaceutical development of at least one drug, comprising isolating the population of human ovarian mesothelial cells as recited in claim 1, and using said ovarian mesothelial cells or any part of the cells thereof as targets of the drugs under development.

13. A method of providing a source of nucleic acids or proteins in a development of bioassays comprising isolating nucleic acids or proteins from the human ovarian mesothelial cells as recited in claim 1 and using said nucleic acids or proteins as one or more of the principle component in the bioassays.